

March 31, 1966

Mr. Arthur M. Ross  
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for the Sciences  
Yale University  
New Haven, Connecticut

Dear Mr. Ross:

I am very happy to learn that the Yale Medical School is contemplating the organization of a Department of Genetics.

This department was established in 1959 in connection with the general reconstruction of the School on the occasion of its move from San Francisco to the Palo Alto campus. The purpose of its establishment was, as for other basic science departments, to provide a focus of medical and graduate education and research in an area deemed to be indispensable among the scientific foundations of medicine. One of the teaching institutes of the Association of American Medical Colleges some few years ago was devoted to the role of genetics in medical education and it is probably unnecessary for me to repeat these general arguments. If your present departments of Pediatrics, Medicine and Psychiatry, to name a few, have not already reached the same appreciation, it is doubtful whether you would get very far in the installation of a Department of Genetics. But I suspect they have!

One of the major decisions that must be made concerning a Genetics Department is the scope of its responsibilities. It might be a quasi-clinical department, become the center of genetic counseling, and exist mainly as a means of solving the dilemma, whether it belongs in the Department of Medicine or the Department of Pediatrics. Such a department would properly be called a Department of Medical Genetics. While this is the name that was adopted for the department at the University of Wisconsin Medical School, it was not in fact founded on that philosophy, and the name attached only as an administrative convenience to distinguish the medical school department from the analogous one in the School of Agriculture. At Stanford there was no such interfering precedent, and we therefore started out with our present designation as a Department of Genetics within the School of Medicine. This implies the other branch of the choice I mentioned, namely that we be a basic science department, that the content of our genetics teaching in relation to clinical problems be analogous to the content of biochemistry teaching in relation to clinical problems. We give our medical students a rather

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fundamental course and we find that they are then very well prepared and highly stimulated to deal with the genetic angles that arise recurrently in their clinical teaching, especially in Pediatrics and in Internal Medicine.

To turn to some of your other questions, I am sure Professor Crow will fill you in on the details of the Wisconsin experience. However, it was quite similar to what we have done here at Stanford, except that at Wisconsin there was already a considerable nucleus of geneticists to draw from in the existing department, including, of course, myself. To some extent the Department of Medical Genetics was a reaction to the progressive stultification of outlook, happily largely reversed since my leaving Wisconsin, that made genetics at Wisconsin during the late fifties relatively very different from what it had been in earlier years. Consequently there is some merit in the present trend there towards increasing unification of activities in genetics, since very different problems need to be solved there now than was the case during my tenure at Wisconsin.

Howbeit, most of the membership of the two Genetics departments has been recruited de novo; the outstanding exception at Wisconsin is of course Professor Patau, who had previously been in Pathology. In organizing a new department at Stanford there simply was no pre-existing group of people to draw from in forming the Genetics Department. In fact, even if there had been, they would almost certainly have been working in clinical areas, and I would contemplate recruiting someone already established in the clinical department into the Department of Genetics only under the kind of exceptional circumstances that would justify such a procedure for the Department of Biochemistry. In fact, we would be very anxious to encourage the use of genetic thinking throughout the relevant clinical departments rather than establish unique labels to some, as against other, pediatricians or internists. This is not to say that there will not be considerable variation in the actual concentration in genetic techniques, and in fact, the Department of Medicine does have an explicit division of hereditary disease. We have worked very happily and cordially with Drs. Schneiderman, Merigan, and Rowley without even raising the question of a more formal departmental affiliation. I hope my remark does not become tedious, but it is really the key to understanding the situation; we have the same range of convergent interests and collaborative programs as you would expect to find as between Biochemistry and the other departments.

To answer what I think is behind your question about the recruitment of members already in other departments: I would consider them only if they in fact displayed the highest credentials for their work as geneticists. This would leave the greatest ambiguity, not in clinical areas, but with respect to scientists working in microbiology, cell biology or biochemistry. True, the lines do become rather vague, since almost any member of our department could certainly qualify for an appointment in some one or more of these areas. But the confusion is no greater than already exists with respect to, say, microbiology and biochemistry.

The *raison d'être* of a separate Genetics Department is its encouragement of the convergence of the evolutionary and the physiological aspects of heredity. It is only within such a department that one can obtain the communication and understanding between population genetics and physiological genetics which is so particularly important for medical education. It is rather unlikely that a Biochemistry Department, however deeply it may be in a position to contribute to the understanding of gene action and protein synthesis, would go into population studies of differential fertility in connection with disease. Likewise, it is rather unlikely that a Department of Public Health would have members who could have a really deep professional understanding of the significance of changes in nucleotides for the functioning of a mutant protein. Without this coordination of the two lines of genetic thought there would be little point to an independent Department of Genetics, except as a matter of administrative convenience, since its activities could then undoubtedly be very readily encompassed in or among any of several other departments.

Our working relationships with the other preclinical departments are particularly close at a research level, especially as between Genetics and Biochemistry. For the most part these can be described as personal. However, the fact that for seven years the Genetics Department was housed in space originally allocated to the Department of Biochemistry has undoubtedly reinforced these relationships. The physical proximity of the laboratories continues to be a very important element in this association. Of all of the preclinical departments at the present time, it is probably most urgent that Genetics be located in such a way as to facilitate its communication with all of the other departments in the school.

At a teaching level the Genetics Department offers a rather compact course in basic genetics, a syllabus of which is enclosed. In addition, the members of the department offer numerous single-shot lectures or seminars, rounds, or discussions within the framework of other curricular material. This holds especially for our "Cell Structure and Function" course, but also for microbiology and pediatrics.

I am also enclosing some general material describing the activities of the department. You will note that the Instrumentation Research Laboratory occupies a prominent position in our activities, and I will readily agree that this is an accidental localism, although it does provide us with very useful and important resources for the other research work in the department. This is not to demean the long-range significance of exobiology as a matter of medical research interest, but it is of course a very specialized one.

At Yale, you do of course have excellent geneticists already in residence in the Microbiology, Molecular Biology, and Biophysics groups, and you may face more urgent problems of coordination than have existed in my own experience. You are especially strong in physiological genetics, and I would see no source of difficulty in giving the medical students whatever exposure to this branch of the field is important to them. But if you stop there I think you will still be missing a great deal, and I know of no better way to insure the

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vitality of the discipline than to give it departmental status. Given these circumstances, if a Department of Genetics were to be established and were seeking an identity at Yale, I would guess that it probably should have a somewhat stronger clinical and population genetic slant than obtains here. Just to illustrate my point, I would think that Barton Childs could very well illustrate the kind of person that you might have to lead such an activity. There could, however, be a range of very satisfactory solutions which might differ mainly in the stress given to the different parts of the departments orientation, which as I might restate, must include real competence in population genetics as well as physiological and cell genetics.

Sincerely yours,

Joshua Lederberg  
Professor of Genetics